

Patent Claims

1. Nucleic acid which codes for a plant or animal nuclear base transporter, selected from:

- a) Nucleic acid which is obtainable through complementation of nuclear base transporter-deficient host cells with a plant or animal gene bank and selection of nuclear base transporter-positive host cells;
- b) Nucleic acid with a sequence which codes for a protein with a sequence according to SEQ ID NO 8 or SEQ ID NO 9;
- c) Nucleic acid which hybridizes with a nucleic acid according to b);
- d) Nucleic acid which in consideration of degeneration of the genetic code would hybridize with a nucleic acid according to b) or with the sequence complementary to b);
- e) Derivatives of a nucleic acid according to a) to d) obtained through substitution, addition, inversion and/or deletion of one or more bases;
- f) Nucleic acid complementary to a nucleic acid according to one of the groups a) to e);

with the proviso that nucleic acids with a sequence according to one of the SEQ ID NO 3 to 5 are excluded.

2. Nucleic acid according to Claim 1, characterized in that it includes the coding sequence of one of the sequences according to the SEQ ID NO 1, 2, 6, 7, or 10 or a derivative derived from these through substitution, addition, inversion and/or deletion of one or more bases.

3. Nucleic acid according to one of the Claims 1 or 2, characterized in that it is a DNA.

4. Fragment of a nucleic acid according to one of the claims 1 to 3, characterized in that in anti-sense orientation to a promoter it can inhibit the expression of a nuclear base transporter in a host cell.

5. Fragment according to Claim 4, characterized in that it includes at least 10 nucleotides, preferably at least 50 nucleotides, especially preferably at least 200 nucleotides.

6. Construct containing a nucleic acid according to one of the Claims 1 to 3 and/or a fragment according to one of the claims 4 or 5, under the control of the elements regulating expression.

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7. Construct according to **Claim 6, characterized in that the nucleic acid or the fragment is in anti-sense orientation to the regulatory element.**

8. Construct according to one of the **Claims 6 or 7, characterized in that it is available in a plasmid.**

9. Host cell containing a nucleic acid according to one of the Claims 1 to 3 and/or a nucleic acid with a sequence according to one of the SEQ ID NO 3 to 5 and/or a fragment of one of the aforementioned nucleic acids and/or a construct according to one of the Claims 6 to 8.

10. Host cell according to **Claim 9, characterized in that it is selected from bacteria, yeast cells, mammalian cells and plant cells.**

11. Transgenic plant as well as plant parts and/or seeds of the plant containing a nucleic acid according to one of the Claims 1 to 3 and/or a nucleic acid with a sequence according to one of the SEQ ID NO 3 to 5 and/or a fragment of the aforementioned nucleic acids and/or a construct according to one of the Claims 6 to 8.

12. Transgenic plant, part of plant, host cell and/or seeds according to one of the **Claims 9 to 11, characterized in that the nucleic acid or the fragment or the construct is integrated into a site on the genome which does not correspond to its natural position.**

13. Protein obtainable through expression of a nucleic acid according to one of the Claims 1 to 3 or a nucleic acid with a sequence according to one on the SEQ ID NO 3 to 5 in a host cell.

14. Antibodies which react with a protein according to **Claim 13.**

15. Process for the manufacture of a transgenic plant, which includes the following steps:

- insertion of a nucleic acid according to one of the Claims 1 to 3 or a nucleic acid with a sequence according to one of the SEQ ID NO 3 to 5 and/or a fragment of this nucleic acid into a plant cell; and
- regeneration of a plant from the transformed plant cell.

16. Process for the influencing of the nuclear base transporter properties of a plant, part of a plant and/or of seeds, which includes the step:

- insertion of a nucleic acid according to one of the Claims 1 to 3 or a nucleic acid with a sequence according to one of the SEQ ID NO 3 to 5 and/or a fragment of this nucleic acid into a plant cell and/or a plant.

17. Use of plant cells according to **Claim 10 for the regeneration and manufacture of entire plants.**

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18. Use of a nucleic acid according to one of the Claims 1 to 3 or a nucleic acid with a sequence according to one of the SEQ ID NO 3 to 5 for the isolation of homologous sequences from bacteria, fungi, plants, animals and/or human beings.

19. Use of a nucleic acid according to one of the Claims 1 to 3 or a nucleic acid with a sequence according to one of the SEQ ID NO 3 to 5 for the expression of a nuclear base transporter in prokaryotic and/or eukaryotic cells.

20. Use of a nucleic acid according to one of the Claims 1 to 3 or a nucleic acid with a sequence according to one of the SEQ ID NO 3 to 5 under the control of a regulatory element in anti-sense orientation for the inhibition of the expression of an endogenous nuclear base transporter in prokaryotic or eukaryotic cells.

21. Use of a nucleic acid according to one of the Claims 1 to 3 or a nucleic acid with a sequence according to one of the SEQ ID NO 3 to 5 for the manufacture of useful transgenic plants.

22. Use of a nucleic acid according to one of the Claims 1 to 3 or a nucleic acid with a sequence according to one of the SEQ ID NO 3 to 5 for the identification of inhibitors of nuclear base transport

Summary

Nucleic acids which code for nuclear base transporters

The invention concerns a nucleic acid coding for a plant or animal nuclear base transporter and various uses of this nucleic acid. In addition the invention concerns a fragment of the nucleic acid, a construct containing the nucleic acid and/or a fragment thereof, and a host cell with the nucleic acid, the fragment and/or the construct. By the present invention there is in addition included a procedure for the manufacture of a transgenic plant by use of the aforementioned nucleic acid as well as a procedure for influencing the nuclear base transporter properties of a plant, part of a plant, a plant cell and/or of seeds.

FIGURES:

Figure 1. Missing, presumably since the original is in English

Figure 2. Ordinate: Cytosine uptake (nmol/mg dry weight x min.) Abscissa: pH

Figure 3. Ordinate: Cytosine uptake (nmol/mg dry weight) Abscissa: Time (min)

Figure 4. Ordinate: Adenine uptake [%] Abscissa: 1->r: adenine, adenosine, cytosine, cytidine, hypoxanthine, thymine, uracil, ATP, CTP, GTP, TTP, cAMP, kinetin, kinetin riboside, zeatine, zeatine riboside, nicotine, caffeine

Figure 5. Heading: Substrate concentration: 100 μ M trans-zeatine
Ordinate: Counts per minute Abscissa: Time (secs) (Kontrolle = control)

Figure 6. a) Sense b) Anti-sense

Figure 7. (Translation not needed)

Figure 8. (No text)

Figure 9. Heading: % caffeine